CHAPTER 7 - PLANT

7-1. Purpose. This chapter is comprised of three subchapters and establishes guidance for appropriate aspects of Civil Works plant.

7-2. Guidance.

a. Section I addresses Design, Acquisition, and Construction of USACE plant.

b. Section I addresses Floating Plant Identification and Record Information.

c. Section III addresses Plant Inspection, Maintenance, Operation and Repair.

Section I. Design, Acquisition, and Construction

7-3. Purpose. This section establishes guidance for the design, acquisition, construction, and alteration of all Civil Works plant.

7-4. Background.

a. Design of Civil Works plant and equipment is limited by HQUSACE to those major items which are not readily available on the commercial market or for which manufacturers' standard designs are not suitable for use.

b. Designs for the construction, or alteration of all types of dredges and for other floating plant requiring acquisition authority of HQUSACE, will be submitted to the Marine Engineering Board for a recommendation to the Director of Civil Works and will be prepared by the USACE Marine Design Center, unless an exception is obtained from CECW-OD.

c. General criteria for design and construction, and for maintenance and operation of floating plant of the Corps of Engineers are outlined on sections 7-6 and 7-7 (following) and ER 1130-2-500, Chapter 7, Section 3, Inspection, Maintenance, Operations and Repair, respectively.

7-5. Guidance - Improvement Programs and Authorities.

a. Programs for the Improvement of Plant and Operations Procedures.

(1) Hopper Dredge Improvement Program.

(a) Request for authority to initiate and proceed with development and improvement projects relating to hopper dredges and their operation procedures, including comments and recommendations as to necessity and feasibility, method of accomplishment, financing and suggested assignment, will be submitted to the Commander, HQUSACE (CECW-OD) for approval. All projects and engineering investigations on hopper dredges and dredging requiring the procurement of equipment or fund expenditure for additions and betterments or alteration of plant, will be scheduled in the applicable Acquisition of Plant, Ownership, and Financial Management Program (see ER 1130-2-500, Chapter 15), and authorities will be obtained as outlined in paragraph 8 of that regulation.

(b) MSCs and districts, in carrying out their assigned projects, will make all detailed studies, procure the necessary equipment, conduct all tests, evaluate the results and prepare the necessary reports. The final report will include the design criteria, guide plans, specifications and other information as necessary to facilitate dissemination of the findings. Drafts of all final reports will be coordinated with the Marine Design Center for review and comments. Final reports will be submitted to CECW-OD for review approval prior to publication of the final reports.

(c) The Marine Design Center will provide the necessary technical assistance and will disseminate pertinent findings relating to hopper dredge improvement projects to the applicable MSCs and districts of the Corps. Periodic visits to the work sites by representatives of the Marine Design Center will be made as necessary. Reports by that staff on the scope of proposed tests, design of proposed models, progress of the work and other appropriate technical and informative subjects will be furnished to the Marine Engineering Board and the applicable MSC and district.

(d) Each suggested study and request for authority for the accomplishment of a hopper dredge improvement project shall include at least the following, as applicable:

- A statement of the objective in terms of use, effect to be accomplished, information to be obtained, and other related results anticipated.

- A statement regarding the limitation and deficiencies of present practices.

- An experience record including reports, references, photographs, maintenance, and/or repair costs and other information which will adequately outline related efforts to date and deficiencies of previous attempts at improvement.

- A firm justification for the proposed project based on improvements in hopper dredging efficiency, economic benefits and safety considerations.

- A program outline suggesting an approach to the problem, tests to be conducted, availability of qualified contractors, availability of qualified field personnel, etc.

- Recommendations regarding the proposed method of financing.

- Upon receipt of assignment of a hopper dredge or dredging improvement task, the District Engineer will prepare a plan and schedule which shall include the complete description of salient details, scheduled commencement and completion dates of the principal phases of the assignment and an estimate of quarterly expenditures.

- Quarterly status reports for all projects will be prepared by the Marine Design Center in accordance with the reporting procedures established by the Marine Engineering Board for project management.

(2) Other Plant Improvement Programs (excluding hopper dredges). Any study or investigation of an innovation, experiment, modification, alteration or betterment which is proposed to provide a significant improvement or change in a recognized concept relating to the subject plant will be submitted to CECW-OD for approval. The initial report after authorization will contain sufficient information to describe the nature, purpose, benefits expected, and the

basis for considering the feasibility of the improvement undertaken. After completion or trials and/or tests of the improvement, a completion report will be furnished CECW-OD describing the

results obtained, whether favorable or unfavorable. In selected cases, the reports will be distributed by CECW-OD to all MSCs which may have a requirement for the improvement developed.

b. Corps of Engineers Marine Engineering Board. The policy and guidance for the Marine Engineering Board are contained in Chapter 8 of ER 1530-2-520, and EP 1130-2-520.

c. Authority for the Acquisition of Land, Structures, Aircraft, Floating Plant, Land Plant, Tools, Automatic Data Processing Equipment (ADPE), Office Furniture and Equipment. Delegations of authority for acquisition by purchase, construction, and transfer or loan from other Federal agencies are tabulated below. All requests for acquisition of Revolving Fund equipment not included in an approved Plant Replacement and Improvement Program will be submitted to the Commander, HQUSACE (CECW-OM-B) for approval. Cost computations for this purpose should be based on total charge to the asset account. No additional authorities are required for acquisition of project owned equipment which is listed as an approved item in a DETAILED PROJECT SCHEDULE ENG Form 2201a (PB-2a).

(1) Land. No delegation of authority.

(2) Structures.

(a) MSC Commander. If cost is $25,000 or more, but less than $400,000 for any building or structure.

(b) District Commander. Up to fifty percent (50%) of the MSC Commander's delegated authority.

(3) Airplanes. No delegation of Authority.

(4) Dredges. No delegation of authority.

(5) Other Floating Plant.

(a) MSC Commander. If cost is $25,000 or more but less than $400,000 per unit.

(b) District Commander. Up to fifty percent (50%) of the MSC Commander's delegated authority.

(c) Plant Acquired on a Loan Basis from Other Federal Agencies. MSCs acquiring floating plant on a loan basis from other Federal Agencies shall assure that the borrowed units are operated, maintained and reported in accordance with the provisions of the loan agreements covering this plant, and that all major modifications thereto are coordinated in advance with the owning agency through CECW-OD. CECW-OD will be notified annually of floating plant items on loan from another agency. (Exempt report, paragraph 7-20, AR 335-15).

(d) Renewal of Loan Agreements. When the provisions of a loan agreement with another Federal agency require periodic renewal of that loan, the renewal request shall be forwarded directly to the owning agency, with a copy to CECW-OD, at least 60 days prior to the end of the load period established by the owning agency. The request shall include the name of the District processing the plant; date of expiration of the loan period; and proper type designation, using descriptive nomenclature utilized by the owning agency, as well as name or number assigned.

(6) Land Plant and Facilities. Mobile and Fixed Land Plant & Equipment.

(a) MSC Commander. If cost is more than $25,000 but less than $200,000 per unit.

(b) District Commander. Up to fifty percent (50%) of the MSC Commander's delegated authority.

(7) Tools, Office Furniture and Equipment for General District use for Continuous Assignment to Plant and Facilities.

(a) Definition. General Office Use. See Paragraph 15-5b, ER 37-2-10.

(b) Delegation of Authority.

- MSC Commander. If cost is more than $25,000 and less than $200,000 per unit.

- District Commander. Up to fifty percent (50%) of the MSC Commander's delegated authority.

d. Authority for Additions and Betterments.

(1) Definition. See Chapter 15, ER 37-2-10.

(2) General. Except as delegated herein, authority will be obtained from the Commander, HQUSACE (CECW-O) for additions and betterments to Revolving Fund owned Land, Structures, and Operating Equipment such as airplanes, floating plant, mobile land plant, fixed land plant (see Chapter 15, ER 37-2-10), including the purchase and installation of equipment and machinery which is in the nature of an addition and betterment and not a replacement.

(3) Operating Equipment Under the Revolving Fund. (Airplanes, Dredges, Other Floating Plant, Mobile Land Plant, and Fixed Land Plant, ADP, etc.)

(a) Dredges. Authority is delegated to MSC Commanders, if the total cost of all additions and betterments per dredge is less than $200,000 per year.

(b) Other Operating Equipment. Authority is delegated to MSC Commanders, if cost per item of plant is less than $200,000 per year or fifty per cent (50%) of the current book value of the plant, whichever is less.

(c) Redelegation of Authority. MSC Commanders are authorized to redelegate to District Commanders up to fifty percent (50%) of the foregoing authorities.

(d) Additions and Betterments. All requests for additions and betterments to dredges and floating plant will be accompanied by properly executed ENG Form 1475 (and 1475A) either

independently or with information incorporated on the forms used for authorization of repairs and replacements. Additions and betterments accomplished during the preceding fiscal year will also be shown on the form in the same manner required for reporting repairs and replacements. Request for authority will be coordinated with the Acquisition of Plant, Ownership, and Financial Management, ER 1130-2-500, Chapter 15.

(4) Land, Structures and Utilities.

(a) MSC Commander. Authority is delegated to MSC commanders, if the cost of improvement and betterment is less than $200,000 for any one building or structure.

(b) District Commander. Authority is delegated to district commanders, up to fifty percent (50%) of the MSC Commander's delegated authority.

7-6. Guidance - Designs, Plans, and Specifications.

a. In the design and construction of all types of plant, applicable provisions of the Safety and Health Requirements Manual, EM 385-1-1, will be complied with unless an exception is granted by HQUSACE.

b. Submission of Requests for Acquisition, Alterations or Additions or Betterment Authority.

(1) Requests for authority for the acquisition or alteration or Revolving Fund owned aircraft, floating and land plant, and equipment, when required, will be submitted to the Commander, HQUSACE (CECW-OM-B), with the following information:

(a) Acquisition of Plant, Ownership, and Financial Management Program reference or recommended adjustment to the Plant Program.

(b) Proposed method of acquisition (construction, purchase or transfer).

(c) A complete description of the plant to be acquired or the alteration to be made will be furnished. If acquisition is to be by procurement or transfer, description will include basic characteristics, descriptive literatures, estimated cost, proposed use, and economic justification. If acquisition is to be by construction, the general characteristics, design criteria, preliminary estimate of cost, and economic justification will be furnished. Design of major floating plant by other than Marine Design Center will be fully justified.

(2) Design Memorandums will be submitted through the Marine Engineering Board to HQUSACE for approval of all plant to be acquired by construction, unless otherwise specified in the HQUSACE correspondence authorizing construction. Design memorandums for major alterations will be prepared when requested in HQUSACE construction authorizations. All design memorandums will be prepared by the Marine Design Center unless a waiver is obtained. The scope and coverage of each Design Memorandum will be determined by the design organization, in coordination with the procuring office, to adequately reflect the complexity of the plant involved. Attached as Appendix I is an outline of a typical design memorandum for a Hopper Dredge to be used as a format guide. Design memorandums for smaller items of plant need not be so detailed but should follow the applicable sections of Appendix I and contain the following:

(a) Authorization

(b) Proposed service and use, including number of shifts and number of months plant will be worked.

(c) Pertinent physical data.

(d) Special construction requirements and equipment.

(e) Design and Construction Cost Estimates.

(f) Design and Construction Schedules.

(g) Normal and special performance requirements.

(h) Estimated monthly operating costs.

(i) Recommendations, including justification data.

(3) Requests for authority for the acquisition of land and acquisition and/or major alterations of structures will include or be accompanied by:

(a) Site map.

(b) General plans and description.

(c) Estimate of cost, to include all appurtenances except tools and shop equipment.

(d) Proposed dates for preparation of detailed plans and specifications.

(e) Approximate date desired to commence construction, and total estimated construction period.

(f) Availability of funds for completion of plans and for construction.

c. Preparation and Approval of Plans and Specifications.

(1) The preparation and approval of plans and specifications for the construction and/or alteration of all plant and equipment will be in accordance with the provisions stated below. Where design memorandums are required, plans and specifications will be based upon the provisions of the approved design memorandums.

(2) Plans and specifications for floating plant within the MSC Commander delegation of authority (paragraph 7-5.d) will be prepared by, or under the jurisdiction of the using District and approved by the MSC Commander having jurisdiction. However, all designs incorporating inboard mounted internal combustion engines will be forwarded to the Marine Design Center for review and comment prior to advertising. Vessels less than 26 feet in length may be excepted from this review provided certification can be furnished that construction will be in compliance with applicable standards of the American Boat and Yacht Council (ABYC). This review will include evaluation of safety equipment and requirements along with the mechanical, electrical,

and structural details of the plant. A copy of the final plans, specification, and shop drawings will be furnished directly to the Marine Design Center for information and record purposes.

(3) Plans and specifications for floating plant for which an exception has been granted under (2) above will be prepared by, or under the supervision of the using District and approved by the MSC Commander having the jurisdiction. A copy of the approved plans and specifications will be furnished the Marine Design Center for review and comment prior to advertising. A copy

of final plans and specifications as issued for advertising purposes will be furnished the Marine Design Center for information and record purposes.

d. Structures. Plans and specifications for structures to be constructed or modified, within MSC Commander delegation of authority (paragraph 7-5.d. above) will be prepared by, or under the jurisdiction of, the using District and approved by the MSC Commander having jurisdiction. HQUSACE will review plans and specification for structures requiring approval for acquisition, construction or modification.

e. Disposal of Floating Plant. No item of floating plant, having an original cost of $50,000 or more, shall be sold, transferred, declare excess, or otherwise disposed of, without obtaining prior authority from HQUSACE, CECW-OD.

7-7. Guidance - Standards and Inspection of Construction.

a. Construction of new floating plant and replacements and alterations to existing plant will be in accordance with the applicable current rules of the American Bureau of Shipping, the rules and regulations of the U.S. Coast Guard, the rules of the U.S. Public Health Services, and the American Boat and Yacht Council, as applicable.

(1) All major floating plant will comply with U.S. Coast Guard rules and regulations and other applicable regulations as contained in Title 46 Code of Federal Regulations.

(2) In board mounted internal combustion engines on Corps of Engineer vessels whether for propulsion or auxiliary power requirements shall not be of the type requiring gasoline or other highly volatile fuels for operation unless authorized by the Commander, HQUSACE (CECW-OD).

b. District Commanders will make arrangements direct with representatives of the U.S. Coast Guard for the time, place and other details of inspection and certification of floating plant. Any deficiencies reported by the inspectors shall be corrected without delay in order that the required certificate may be issued. Difference in interpretation of the rules and regulations which cannot be resolved at local level shall be referred to CECW-OD for coordination with the Commandant, U.S. Coast Guard.

c. The color scheme as set forth below will be used for the exterior painting of all Corps of Engineers major floating plant. Skiffs, rowboats, launches, small boats and other similar craft which are mass produced in standard colors and which would require substantial additional costs to comply with the Corps' color scheme, are exempt from these requirements. Numbers in parentheses refer to color spots and supplemental color chips as shown in Federal Standard No. 595, COLORS, and are included in order to define the particular shade and intensity of color desired. Slight variations in the shades shown, resulting from standards determined and approved at Division level, utilization of existing stocks, or local procurement practices, are acceptable. However, in the interest of uniformity, efforts will be made to comply as closely as practicable with the colors as defined in this regulation.

(1) Hull above water-line: Black (17038).

(2) Steel decks: Deck Red. (10076) Except that where special types of deck coatings have been approved for use, the resultant color will be acceptable.

(3) Deck Fittings: Yellow (13655).

(4) Houses: Deck house will be old ivory (17855) with red (11136) margin facings. As an option, a band of slate grey (16187) may be applied on the deck house extending 36 inches above deck or along the line of bottom window frames.

(5) Interior of cowls: Red (11136).

(6) Smoke and exhaust stacks: Black (17038) (heat-resisting paint) with red (11136) band, trimmed with aluminum, and with castle in aluminum. The width of the red band will be twice the height of the castle with 6-inch aluminum bands above and below the red. The communication mark (castle) should be mounted on the outboard side of the stack(s).

(7) Galley Stack: Black (17038) (heat-resisting paint).

(8) Masts, kingposts, ventilators, cowls, boat davits, deck tanks, "A" frames, gallows frames, spud frames and back legs, derricks and cranes. Old ivory (17855) to match deckhouse exterior. An optional band of slate grey (16187) can be used as specified in para 7-7c(4) above.

(9) Staffs and booms: Old ivory (17855) except as noted in (8) above.

(10) Life rafts and lifeboats: Old ivory (17855) and red (11136) margin facings.

(11) Parts of plant as specified in (8), (9), and (10) above may be painted black or slate gray if experience has proved that the old ivory causes reflection of light and attendant glare upon the vision of the navigator or operator. Some parts may also be painted black or slate gray if on hurricane deck, or in locations where experience has proved that frequent scrubbing and painting will not keep these clean or present an appearance similar to the remainder of the plant due to soot and smoke from stacks and exhausts.

(12) Booms, "A" frames, and other parts of dipper dredges, derrick-boats and similar plant, likely to be discolored by oil and grease from operating cables or chains: Black (17038).

(13) Forward and after davits for drag pipes on hopper dredges: Black. (Option: Due to discoloration by oil and grease from operating cables: slate gray or aluminum).

(14) Wheel shafts and flanges for paddlewheel boats. Old ivory with wooden parts black.

(15) Suction pipes and sponsons on pipeline and seagoing hopper dredges: Black.

(16) Name board: See ER 1130-2-500, Chapter 7, Section II, Floating Plant Identification and Record Information.

(17) Interiors: Colors of interiors, including interior decks, are optional.

(18) Coaming of hoppers on hopper dredges: Old ivory.

(19) The prescribed coloring will be applied in such a manner as to obtain the most attractive appearance with due regard to serviceability.

(20) The information contained in EM 1110-2-3400 and other pertinent publications should be used to assist in the selection of an appropriate paint system. Paint ingredients may be varied as experience dictates because of climate conditions but final color should match the referenced color spots and supplemental color chips.

Section II. Floating Plant Identification And Record Information

7-8. Purpose. This section establishes guidance for naming, marking, and recording items of Corps of Engineers floating plant.

7-9. Guidance.

a. Names, Numbers or Other Identifications of Floating Plant.

(1) Recommendations for proposed identification will provide at least one and preferably two alternate selections. Adequate basic biographical or other data will be furnished for each selection submitted. Without exception, no item of floating plant will be named in honor of a living person. Ordinarily, only numerical designations will be assigned to barges, scows, flats and minor item of plant such as small boats, skiffs, etc.

(a) Preference will be given to names of deceased officers and employees of the Corps of Engineers, or to waterways or other geographical features of regions in which the items of floating plant are to operate, or historical names directly connected therewith.

(b) Ordinarily, when the name of a deceased person is to be assigned, the use of the surname only is desirable. This view is based on the facts that the surname usually identifies adequately the person so memorialized, simplifies correspondence, reduces upkeep, is easier to comprehend, and assigned full names are rarely utilized in references. Also, the military title held by the deceased person so honored may differ at the time of his/her death from that held when he/she was associated with the locality in which the craft is to be employed.

(2) Historical or geographical names for items of floating plant will be confined to single words wherever practicable. Names which are unwieldy or uncommonly long or which consist of combinations which include physical features such "River", "Bay", "Point", etc., will be avoided.

(3) Whenever an item of floating plant is renamed or renumbered, all official correspondence referring to the vessel will include both the revised and former name or number for a period of 5 years following date of redesignation. One copy of the approving or assigning

document, or the notification of assignment of each vessel designation will be furnished the Commander, HQUSACE, Attention: CECW-OD.

(4) When a newly acquired floating plant item is to carry a name identical to that of the plant which it replaces, the name will be followed by a dash and appropriate Roman Numeral to indicate that it is a replacement, i.e., IOWA-II would be the name for a vessel replacing one named IOWA.

(5) Duplications or close similarities with existing names will be avoided. District Commanders are authorized to assign numbers or combinations of numbers and letters consistent with a uniform numbering procedure for minor items of plant.

b. Standards for Marking Floating Plant.

(1) All floating plant will be appropriately marked for easy identification with only the authorized designation. Acceptable markings for various types of floating plant can be found in Appendix J. Markings may be adjusted for acceptable locations based on vessel design and arrangement as appropriate. Colors that contrast with background coloring will be used for marks. All lettering will be Gothic block capitals and all numbers will be Arabic. Lettering may be painted on, stenciled, inlaid, burned in, welded, attached with studs, etc., to suit. The sizing and spacing of the lettering will preferably be as indicated in Table K-1, Table K-2, and Table K-3 in Appendix K. However, smaller size lettering may be used where the table size results in an impractical or disproportionate arrangement. In no case, will the lettering size be reduced to less than one half the table size, or less than four inches.

(a) Name Boards - General. Name or number of vessel, of suitable size and with at least a one-inch margin at top, bottom and ends of board(s). Name boards will normally have blue background with gold lettering. The material used for this purpose may be patent gold leaf letters with a Prussian blue smalt preparation background, or appropriate modern blue and gold reflective or illuminating paint.

(b) Letters of a color that contrasts with background coloring will universally be used on the hull, life rings, etc.

(c) An uninterrupted appearance of the vessel identification will be obtained by considering all interfering or projecting structural members or fittings, such as port-holes, stanchions, rubbing stakes, fenders, etc.

(2) The Classes of Corps of Engineers floating plant are designated as follows:

Class	Determination
A	vessels under 16'-0" in length overall
1	vessels 16'-0" or over in length overall but less than 26'-0"
2	vessels 26'-0" or over in length overall but less than 40'-0"
3	vessels 40'-0" or over in length overall but less than 65'-0"
4	vessels 65'-0" or over in length overall

c. Class 3 and Class 4 Self-Propelled Plant.

(1) Name Boards. Names of vessels will be displayed on name boards located above the weather deck on both port and starboard sides preferably abreast of, or on top of, the pilothouse at the outboard rails. Name boards shall be wood or steel or other acceptable product for exterior use and shall be rectangular in shape. The vertical dimension shall be twice the height of the lettering used. The designation marking shall be as indicated in Fig. K-1, Table K-1, page K-1, except that if the resulting name board would be disproportionately large, the lettering may be reduced in height to not less than one-half that specified. The board should have a Prussian blue background with gold color letters, or modern blue background with gold color letters.

(2) Port and Starboard Bows. Identification designation will be displayed on both sides of the bow in the following preferred manner:

CORPS OF ENGINEERS
U.S. ARMY

See Fig. K-2 and Table K-1, page K-1, for preferred six lettering and spacing. Where the above arrangement is not practical, a single line may be used as follows:

CORPS OF ENGINEERS U.S. ARMY

See Fig. K-3, Table K-1, page K-1, for preferred size lettering.

(3) Stern. Identification on, or on the port and starboard sides near the stern will be as indicated below. The preferred method of indication is three lines with letters centered on the stern of the hull. See Fig. K-4, Table K-2, page K-2, for size lettering and spacing.

NAME OF VESSEL
CORPS OF ENGINEERS
U.S. ARMY

An acceptable alternate lettering arrangement will be as indicated below.

NAME OF VESSEL
CORPS OF ENGINEERS U.S. ARMY

See Fig. K-5, Table K-2, page K-2, for size lettering and spacing.

In cases where the above identification on the hull at the stern is impractical, a name board facing aft mounted above the weather deck or above the next highest deck in the vicinity of the stern may be used.

(4) Plaques. Self-propelled plant 65'-0", or more, in length (Class 4 vessels), may be equipped with a plaque mounted inside the deckhouse in a conspicuous place such as a main passageway, recreation room or mess room, etc. The plaque should be not less than 8" x 10 ½" minimum dimensions and include the name of the vessel and biography of the person for whom the vessel is named, or a brief historical statement of the geographical location, when so named.

d. Class 3 and Class 4 Non-Propelled Plant. Non-propelled vessels with ship-shaped hulls shall have exterior designation markings as specified for Class 3 and Class 4 self-propelled plant.

e. Class A, Class 1 and Class 2 Plant.

(1) With Pilothouse.

(a) Name or Number Designation. Small plant with a pilothouse shall have name boards on top of the pilothouse, port and starboard, with the name or number as required. See Fig. K-1, and Table K-1, page K-1, for size lettering and spacing.

(b) Port and Starboard Bows. Small plant with a pilothouse shall have the designations on each side of the bow as follows:

CORPS OF ENGINEERS
U.S. ARMY

See Fig. K-4, Table K-2, page K-2, for size lettering and spacing. An alternative acceptable method will be as follows:

CORPS OF ENGINEERS U.S. ARMY

See Fig. K-5, Table K-2, page K-2, for size letters.

The name, number of Corps of Engineers, U.S. Army designation shall be placed three-fourths of the height between the loaded waterline and the top of the forward gunwale, deck or bulwark and approximately 18 inches or more back from the stern or forwardmost part of the hull, will be as indicated below.

(c) Stern Designation. Identification, centered on the above water portion of the vertical or sloping stern of the hull, will be as indicated below. The preferred method is three lines.

NAME OR NUMBER
CORPS OF ENGINEERS
U.S. ARMY

See Fig. K-4, Table K-2, page K-2, for size lettering and spacing.

NAME OR NUMBER
CORPS OF ENGINEERS U.S. ARMY

See Fig. K-5, Table K-2, page K-2, for size lettering and spacing.

(2) Without Pilothouse.

(a) Name or Number Designation. Small plant with no distinct pilothouse shall have the name or number of the vessel on the bow, port and starboard in letters not less than 4" high.

(b) Stern Designation. See 7-9.e.(1)(c), above.

(3) In those cases where the above identification on the stern is impractical, a name board facing aft mounted above the deck in the vicinity of the stern will be used, or in the case of a tug, the designation may be centered on the aft bulkhead of the house.

(4) Vehicles designated by numbers rather than names shall not use the prefix "No" or "CE" ahead of the number.

(5) Launches and small boats on Class 3 and Class 4 plant will have the name of the plant on the port and starboard bows applied with the procedure noted in 7-9.e.(1)(b) above, and across the stern, or on the port and starboard sides, the designation shall be as stated in 7-9.e.(2)(a), above. Where more than one boat exists on the plant, they will be designated after the name with a Roman numeral dash I and dash II.

f. Barges.

(1) Barges with Long Deckhouses. When the length of the deckhouse is more than one-half the length of the hull of a double or single raked barge, the numerical designation of the barge will be indicated on the house sides port and starboard near the ends. The size of the barge numbers will be indicated in Fig. K-7, Table K-3, page K-3. On the longitudinal center of the

house above the doors and/or windows the markings will preferably be in two lines as follows with the size and spacing of the lines as shown in Fig. K-8, Table K-3, page K-3.

CORPS OF ENGINEERS
U.S. ARMY

An accepted alternative will be a single line as follows with the size lettering as indicated in Fig. K-6, Table K-3, page K-3.

CORPS OF ENGINEERS U.S. ARMY

No designation will be applied to the hull proper.

(2) Barges with Deckhouse One-Quarter to One-Half Barge Length. When the length of a deckhouse is one-quarter to and including one-half of the overall length of the hull of a double or single raked barge, the designation will be as shown below:

BARGE NUMBER
CORPS OF ENGINEERS
U.S. ARMY

Size of lettering and spacing will be as indicated in Fig. K-7, Table K-3, page K-3, and shall be centered longitudinally on the port and starboard sides of the house and athwartship at the forward and aft sides of the house. No markings will be applied to the hull proper.

(3) Barges with Deckhouses Less Than One-Quarter Barge Length. When the length of the deckhouse is less than one-quarter of the overall length of a double or single raked barge, the barge number and markings similar to those of Fig. K-7, Table K-3, page K-3, will be centered on the aft end of the house only. In addition, the hull of the barge will have the number and designation markings similar to those for a single or double raked hull as applicable. The size of the lettering will be as indicated in Fig. K-6, Table K-3, page K-3.

(4) Flat Deck Barges. Barges with a rake at each end of the hull and without any appurtenances above the deck such as cargo bins, bulwarks, deckhouses, etc., will have the number of the barge on the sides at each end port and starboard. One line designation "CORPS OF ENGINEERS, U.S. ARMY" will be centered longitudinally at amidships, port and starboard. The markings will be centered vertically preferably at 12 inches below the deck at side. Identification designations will not be applied to rubbing strips or fenders. The size of the designation will be as shown in Fig. K-6, Table K-3, page K-3. If sufficient space is not available on the sides at the ends for the number designation, the size of the number designation may be reduced to not less than one-half the size of the markings at amidships, but not less than 4" in height.

- Barges with a single rake at one end of the hull shall have the number designation on the side at the bow, port and starboard. One line designation "CORPS OF ENGINEERS, U.S. ARMY" shall be on the side, port and starboard at the stern. See Fig. 6, Table 3, page K-3, for size of the designations.

- No designation markings shall be applied to the transverse forward or aft ends of either a single or double raked barge hull.

(5) Barges with Cargo Bins and/or Bulwarks. Barges with a rake at each end of the hull and cargo bins or bulwarks above the deck shall have designation markings similar to that for flat deck barged with a rake at each end, except that the markings shall be located near the top of the cargo bin or bulwarks in lieu of on the hull proper. See Fig. K-6, Table K-3, page K-3, for size lettering. In addition, the designation in a single line "CORPS OF ENGINEERS, U.S. ARMY" with size lettering as shown in Fig. K-6, Table K-3, page K-3, shall be located on the forward and aft transverse ends of the cargo bins and/or bulwarks. In lieu of the single line designation a double line markings may be used of the forward and after transverse ends of the bins and/or bulwarks with size lettering and spacing to be as shown on Fig. K-8, Table K-3, page K-3.

(6) Barges with a rake at one end of the hull and with a cargo bin and/or bulwark on the deck, will have the designation markings as specified for single-rake flat deck barges with a rake at one end except that the markings shall be located port and starboard near the top of the longitudinal sides of the bin or bulwark. See Fig. K-6, Table K-3, page K-3. In addition, the forward and after transverse ends of the bins or bulwarks will have the designation markings as specified above for the double raked barges with bins or bulwarks.

(7) Crane Barges. The crane with no deckhouse will have number and designation markings as specified for double or single raked hulls of flat deck barges as applicable. In addition, the designation shown below and as in Fig. K-7, page K-3, will be centered on both sides of the crane cab.

NUMBER OF BARGE
CORPS OF ENGINEERS
U.S. ARMY

Crane barges with deckhouses will have number and designation markings as specified under preceding paragraph for barges with long or short deckhouses as applicable plus the crane markings indicated above on both sides of the crane.

(8) Fuel Barges. Oil barges will have number and designation markings similar to those specified for flat deck barges with single or double rakes as applicable.

7-10. Descriptive Data.

a. Whenever items of floating plant, both Revolving Fund and Project owned, of the types indicated below are constructed or otherwise acquired, data thereon will be compiled on the applicable ENG Form 33A through E, "Description of Plant", and a copy thereof shall be transmitted to HQUSACE, Attention: CECW-OD within 30 days after the plant is placed in service. In the event alterations made to plant require correction of data previously submitted, copies of revised forms will be transmitted within 30 days after completion of the alterations.

b. Applicable forms for submission of data are as follows:

ENG Form 33A - Seagoing hopper dredges, sidecaster dredges and vessels resulting from the conversion of hopper dredges.

ENG Form 33B - Hydraulic pipeline dredges and booster barges.

ENG Form 33C - Dipper and bucket dredges, derrickboats, maneuver boats, piledrivers, graders, drill boats and jet probing barges.

ENG Form 33D - Towboats, tugs, tenders, survey boats, patrol boats, launches, snagboats, fireboats, and hyacinth plant.

ENG Form 33E - Dump scows, quarterboats, and barges.

c. Stocks of ENG Forms 33A through E will be requisitioned from the Corps of Engineers Publications Depot as needed.

d. In order that the information entered on the forms may be directly comparable for evaluation and design purposes, the following definitions are provided for those items where differences in interpretation may occur. Where definitions of terms are not provided, entries required are considered to be self-explanatory. Information entered on "Description of Plant" cards for new or altered plant requiring resubmission of data shall be in accordance with the following definitions, with local entry of supplemental wording as necessary.

(1) DATE: In lieu of single line entry at top of card to show date of submittal, show two line items as follows:

Date of Original Submittal _____19___
Date of Revised Submittal _____19___

(2) LENGTH OVERALL: ENG Forms 33A and 33E - The overall length of the hull proper from bow to stern measured from outside to outside of plating, fenders, or other permanently installed structure which is part of the hull.

ENG Form 33B - Same as for 33A and E above, except that where vessel is fitted with sternwheel, dustpan, or cutter head and ladder or other such appurtenance, the distance from the forwardmost end of the cutter or dustpan head, when the ladder is in stowed position, to the aftermost fixed hull structure, sternwheel, or wheel support.

ENG Form 33C - Same as for 33B above, except that for vessels fitted with a fixed A-frame or boom which overhangs the hull, the distance from the forwardmost point of this structure, in stowed position, to the aftermost fixed hull structure.

ENG Form 33D - Same as for 33A and E above except that where cutting blades are installed as in the case of hyacinth plant or where towing knees are installed, the overall length shall include these items or other like items which are an integral part of the vessel.

(3) LENGTH BETWEEN PERPENDICULARS: ENG Forms 33A and 33D, as applicable - The distance between the forward perpendicular and the after perpendicular defined on the lines plan as the LBP, or the molded length.

(4) LENGTH OF HULL: ENG Forms 33B through 33E - The length of the hull proper, from inside to inside of hull plating on metal boats, or from outside to outside of planking on wood boats, but not including fenders, towing knees or other appurtenances on the wood hull.

(5) BEAM, MOLDED: ENG Form 33A - The maximum hull width, amidship, measured from inside to inside of shell plating.

(6) BEAM, OVERALL: ENG Forms 33B through 33E - The maximum width of the vessel measured from the outside to outside of plating, planking, fenders or other permanently installed structure which is part of the hull.

(7) DEPTH AMIDSHIP, MOLDED: ENG Forms 33A through 33E - The depth of the hull, amidships, measured from the underside of the bulkhead deck plating (or planking) to the molded base line.

(8) DISPLACEMENT, LIGHT - LONG TONS:

(a) ENG Forms 33A - The weight, in long tons (2240 pounds), of the vessel complete and ready for service. It includes: water in boilers to steaming level; lubricating oil, fuel oil and water in machinery, fire, sanitary, and fuel lines; and water in suction pipes, dredge pumps, and hopper discharge system, as would obtain after the dredge had stopped pumping water, the drags raised to the stowed position, and the hoppers completely unwatered. It also includes the weight of all engine room spare parts, boatswains and deck stores, mattresses and bedding, the weight of all life boats, rafts and floats fully provisioned, and the weight of any permanently installed ballast. The light ship weight does not include the weight of fuel oil or lubricating oil in settling or storage tanks, fresh water in potable, culinary or feed water tanks, consumable refrigerated dry stores, the crew, nor their personal effects.

(b) ENG Form 33B - Same as 33A, except that in the case of hydraulic pipeline dredges, booster barges, the light ship weight will include the weight of residual water in the suction and discharge lines and in the pumps to a level which would obtain upon shutting down after pumping water. Spuds should be considered raised and, in the case of dredges, the ladder shall also be considered raised to the stowed position.

(c) ENG Forms 33C through 33E - Same as 33A or 33B, as applicable.

(9) DISPLACEMENT, LOADED:

(a) ENG Form 33A - The weight in long tons (2240 pounds) of the ship in light condition, plus the normal loading of fuel oil, lubricating oil, water, consumables, crew and effects, and hopper spaces filled to normal overflow capacity with material considered to have a density of 125#/cu. ft.

(b) ENG Form 33B - The weight, in long tons, of the light ship plus the normal loading of fuel oil, lubricating oil, water, crew and effects. Spuds and ladder shall be considered lowered to maximum working positions.

(c) ENG Form 33C through 33E - Same as 33B, except that in the case of water, oil, and cargo barges, the loaded displacement shall include the weight of cargo based on the design capacity of the vessel.

(10) KEEL, DRAFT, LIGHT, FORWARD, F.W. OR S.W.:

(a) ENG Form 33A - The light draft forward shall be reported as the mean of the port and starboard drafts as read from the forward draft marks to the nearest ½ inch with the vessel in the condition as reported under DISPLACEMENT, LIGHT. Show by deletion of non-applicable designation whether drafts as read apply to fresh (F.W.) or salt water (S.W.).

(b) ENG Forms 33B through 33E - Same as for ENG Form 33A.

(11) KEEL, DRAFT, LIGHT, AFT, F.W. OR S.W.:

(a) ENG Form 33A - The light draft aft shall be reported as the mean of the port and starboard drafts as measured from the after draft marks to the nearest ½ inch with the vessel in the condition as reported under DISPLACEMENT, LIGHT. Show by deletion of non-applicable designation whether drafts as read apply to fresh or salt water.

(b) ENG Forms 33B through 33E - Same as for ENG Form 33A.

(12) KEEL, DRAFT, LOADED, FORWARD, F.W. OR S.W.:

(a) ENG Form 33A - The loaded draft forward shall be reported as the mean of the port and starboard drafts as read from the forward draft marks to the nearest ½ inch with the vessel in the condition as reported under DISPLACEMENT, LIGHT. Show by deletion of non-applicable designation whether drafts as read apply to fresh or salt water. Show normal capacity in cubic yards of 125#/cu. ft. material in hoppers.

(b) ENG Forms 33B through 33E - Same as for ENG Form 33A as applicable.

(13) KEEL, DRAFT, LOADED, AFT, F.W. OR S.W.:

(a) ENG Form 33A - The loaded draft aft shall be reported as the mean of the port and starboard drafts as read from the after draft marks to the nearest ½ inch with the vessel in the condition as reported under DISPLACEMENT, LIGHT. Show by deletion of non-applicable designation whether drafts as read apply to fresh or salt water. Show normal capacity in cubic yards of 125#/cu. ft. material in hoppers.

(b) ENG Forms 33B through 33E - Same as for ENG Form 33A as applicable.

(14) MATERIAL OF HULL:

(a) ENG Form 33A - Show the principal structural material, or combination of principal structural materials, used in the fabrication of the house or superstructure.

(b) ENG Forms 33B through 33E - Same as for ENG Form 33A as applicable.

(15) WHEN BUILT: ENG Forms 33A through 33E - Show month and year of completion of original construction and also show, as necessary, month and year of completion of major conversion.

(16) WHERE BUILT: ENG Forms 33A through 33E - Show city and state of site of original construction.

(17) BUILDER: ENG Forms 33A through 33E - Show name of contractor, or indicate if built with Government plant and hired labor.

(18) PURCHASED OR ACQUIRED FROM: ENG Forms 33B through 33E - Show builder if vessel was contracted for, or show previous owner or owning district if vessel acquired by direct purchase, transfer, or loan. Show date (month and year) of transaction.

(19) CONSTRUCTION COST: ENG Forms 33A through 33E - For vessels acquired as a result of a construction contract, show total of funds paid to the contractor for vessel as delivered.

(20) PURCHASE PRICE: ENG Forms 33B through 33E - For vessels acquired by other than construction contract, show total of funds expended for the vessel as acquired.

(21) OTHER FIRST COSTS: ENG Forms 33A through 33E - Show total of all costs, other than construction or purchase costs, expended to date the plant was put into productive service. The total of construction cost or purchase price plus other first costs will equal the figure shown under Item 3, Original Cost, on Form 22 (Costs).

(22) COST TO DATE: ENG Forms 33A through 33E - Show total of construction or purchase costs, other first costs, and all other costs of additions and betterments or alteration costs to date of latest submittal of Description of Plant card.

(23) GROSS TONNAGE: ENG Forms 33A through 33D - Show U.S. gross tonnage.

(24) NET TONNAGE: ENG Forms 33A through 33D - Show U.S. net tonnage.

(25) CREW REQUIRED:

(a) ONE SHIFT OPERATION: ENG Forms 33A through 33E - Show total number of personnel formally required for a nominal eight-hour day, five-day week operation while vessel is utilized in its normal function.

(b) THREE SHIFT OPERATION: ENG Forms 33A through 33E - Show total number of personnel formally required for a 24 hour day, seven-day week operation while vessel is utilized in its normal function.

(26) ACCOMMODATIONS OF VESSEL:

(a) OFFICERS: ENG Forms 33A through 33E - Show number of berths provided for and assigned specifically for use by officers. Also show in parentheses the additional officer berths provided as spares.

(b) CREW: ENG Forms 33A through 33E - Show number of berths provided for and assigned specifically for use by members of the crew. Also show in parentheses the additional crew berths provided as spares.

(27) UNWATERING: ENG Form 33A - Indicate "yes" or "none" whether hopper unwatering system is installed on vessel.

(28) DEGASSING: ENG Form 33A - Indicate by type of system or "none" whether degassing system is installed on vessel.

(29) RADIO CALL LETTERS: ENG Forms 33A through 33E - Show assigned radio call letters.

(30) RADAR: ENG Forms 33A through 33E - If vessel is equipped with radar, show manufacturer's name and equipment designation; if no radar, so indicate.

(31) HOPPERS, NUMBER: ENG Form 33A - Show number of individual hopper spaces as defined by the principal longitudinal and transverse hopper bulkheads.

(32) TOTAL CAPACITY IN CUBIC YARDS: ENG Form 33A - Show both normal capacity without flash boards, and show in parentheses the total capacity with flash boards in place.

(33) DRAGS:

(a) NUMBER: ENG Form 33A - Self-explanatory.

(b) LOCATION: ENG Form 33A - Show distance from amidships to center line of trunnion in feet.

(c) TYPE: ENG Form 33A - Show type of draghead used in normal service in the owning district.

(34) CRUISING RANGE: Show the estimated maximum distance, in status miles, that the vessel can run on its full bunker capacity.

(35) TYPE OF PLANT - OWNERSHIP: ENG Forms 33B through 33E - In addition to defining the type of plant, show in same space either ownership under Revolving Fund or ownership by specific project, identified by project name.

(36) VERTICAL CLEARANCE REQUIRED: The maximum height of a vessel, above the waterline, for bridge clearance purposes. This height shall be measured to the highest fixed point of the vessel in the light condition. Moveable masts, A-frames, booms, antennae, etc. shall be in a lowered position in determining this figure.

NOTE: All other information required on both front and back of all ENG Forms 33 Series is factual to the extent that no definition of terms appears necessary. The information entered should, however, be as complete as possible and should show horsepower, voltage, amperage, dimensions, etc. as rated and shown by the equipment manufacturer of the device installed.

7-11. Photographs of Plant. Whenever items of floating plant, Revolving Fund and Project owned, of the types listed in para. 7-12 below are constructed or otherwise acquired, record photographs shall be made and submitted to HQUSACE, Attention: CECW-OD.

7-12. Vessel Registration. When a vessel is purchased or otherwise acquired, the District Commander shall determine the requirements for registering the vessel with the United States Coast Guard (USCG), American Bureau of Shipping (ABS), and the United States Public Health Service (USPHS).

Section III. Floating Plant Inspection, Maintenance, Operation, and Repair

7-13. Purpose. This section establishes guidance for the inspection, maintenance, operation, and repair of Civil Works Revolving Fund and Project-owned floating plant.

7-14. Guidance.

a. Inspection.

(1) District Commanders shall arrange for inspection and certification by the U.S. Coast Guard (USCG) Officer in Charge of Marine Inspection (OCMI) of all vessels in accordance with applicable provisions of 46 CFR and the provisions of the Inspection Agreement found in Appendix L unless a waiver is obtained from CECW-OD. Any deficiencies reported by Coast Guard inspectors shall be corrected without delay so that required documents may be obtained. When plant is not in use, inspection and certification is at the option of the District Commander.

(2) All floating plant not covered in paragraph 7-14.a.(1) above, and those for which a waiver has been obtained shall be maintained and operated in accordance with the regulations of the USCG. This requirement does not contemplate registry of such craft with the USCG, American Bureau of Shipping (ABS), and the U.S. Public Health Service (USPHS), nor inspection by the Coast Guard. In lieu of such registry or inspection, each vessel in this category will be initially inspected by a representative of the District Commander to develop the equipment required for safe operation and the permissible number of persons that may be carried on board. This information will be included on an ENG Form 3579, Certification of Inspection, which will be posted near the operating controls of the vessel. An annual inspection of vessels in this category will also be made by a representative of the District Commander to assure conformance with the cited criteria. In cases where it is not practical to post the certificate on the vessel, such as skiffs propelled by outboard motors, the ENG Form will be available at the resident or project office operating the vessel or aboard the major floating plant to which the small craft is assigned.

(3) Floating plant steam boilers and unfired pressure tanks shall be inspected in accordance with USCG Regulations and ASME code. A record of such inspections shall be posted, under glass, in the engine room.

(4) When a major conversion or rehabilitation is accomplished which involves the safety of the vessel, the District Commander shall determine whether an inspection by the Coast Guard is warranted.

(5) All floating plant on which employees are quartered or subsisted, and for which no standards of safety and sanitation are otherwise prescribed, shall be maintained with proper regard for the safety, health and comfort of the employees. All floating plant where persons are quartered or subsisted will be inspected annually by a representative of the District Commander and any deficiencies in maintenance, operation, construction, and equipment will be recorded and corrected promptly. When in operation, such plant will have at least one employee assigned at all times who is directly responsible for protection against fire, theft, or sinking.

(6) Differences which cannot be resolved between the District and the OCMI over Coast Guard inspection regulations or requirements will be referred to the Commander, HQUSACE (CECW-OD) with adequate detail to justify an exemption from inspection or development of a solution with the Commandant, U.S. Coast Guard.

b. Maintenance and Repairs.

(1) All floating plant shall be maintained and repaired to meet the requirements imposed by HQUSACE, applicable provisions of 46 CFR, and the laws of the United States, and any State in which it is operated. Additions, betterments and repairs will be performed in accordance with applicable rules or regulations of HQUSACE, ABS, USCG, and the USPHS.

(2) Survey of Repairs Required.

(a) Floating plant will be evaluated annually to determine which units will require repairs or replacements and/or additions and betterments during the next repair period.

(b) The annual evaluation prescribed in paragraph 7-14.b.(2)(a) above should not be considered a requirement for dry-docking or overhauling a vessel every year. District Commanders should establish varying repair cycles for different items of plant which are based on the location, type of utilization, and the degree of maintenance required for an economical and efficient operation. In order to avoid extended shipyard-repair periods and minimize overhaul--repair costs, crew members should be regularly assigned maintenance and repair duties within their respective capabilities whenever they are in a duty status. Division Commanders will closely supervise the plant-repair programs of their Districts with a view to accomplishing repairs on an as-needed basis to the fullest extent practicable. Insurance or extensive preventive repairs, in anticipation of possible breakdowns during operations, should be kept to a minimum.

(c) In connection with the above annual evaluation, group and nongroup plant estimates will be prepared on ENG Form 1475, Plant Repairs, and ENG Form 1475A, Plant Repairs Continuation Sheet, only for those items of plant for which repairs or replacements are scheduled and/or additions and betterments are programmed for the next repair season and for which approval by higher authority is required. At their discretion, MSC Commanders may arrange for the temporary detail of especially qualified personnel from their staff, other MSCs, or from HQUSACE, for assistance in making these estimates. For comparative purposes, a description of the repairs and/or additions and betterments accomplished on non-group plant, along with actual costs, will be shown on each required ENG Form 1475, for the most recent repair period. Requests for authority for additions and betterments will be coordinated with the Acquisition of Plant, Ownership, and Financial Management Program as outlined in Chapter 15 of ER 1130-2-500, and requests for approval for additions and betterments will be made as outlined in Chapter 7 of ER 1130-2-500.

(d) ENG Form 1475 will be submitted promptly for review and approval by appropriate higher authority in accordance with the limitations outlined in Chapter 7, Section 3 of ER 1130-2-500. Repair factors included in Plant Rate Computations, ENG Form 22 (Costs), and Plant Record Card-Grouped Items, ENG Form 2438, will be reviewed and analyzed in accordance with EM 1125-2-306 and Chapter 7 of ER 1130-2-500. The original of each ENG Form 22 (Costs) and ENG Form 2438, or revision thereof, will be furnished CECW-OM-B.

(e) MSC commanders will issue instructions for adapting ENG Form 1475 for use in connection with repair estimates for Group Plant indicating the manner and frequency of submission, the detail required, whether prior year total group costs are to be shown, and whether submission is to be on a group or individual item basis.

(f) Any repair or addition and betterment item of work accomplished which would significantly improve the efficiency of similar existing plant or the design of future plant applicable to other MSCs should be reported to CECW-OD for evaluation and direction by the Marine Engineering Board. The report should include sufficient details and, if appropriate, drawings or other data which could be readily disseminated. (Exempt report, para 7-2y, AR 335-15).

c. Operations.

(1) Operators of uninspected self-propelled floating plant, up to and including vessels 65 feet in length, will be qualified and licensed by the USCG, or the District Commander as required by ER 385-1-91. If a Corps of Engineers licensing program is established in a District, a Corps of Engineers Motorboat Operators License, ENG Form 3962 and an Operators identification, Optional Form 346, will be issued to all qualified operators in accordance with the instructions in Appendix M of this pamphlet.

(2) Hopper dredge allowable draft is limited to ABS loadline limits

(3) Officers and crewmen of self-propelled floating plant, inspected and certificated by the U.S. Coast Guard will be licensed and/or documented by the U.S. Coast Guard.

(4) The operation of all floating plant shall be in accordance with the requirements of EM 385-1-1, Safety and Health Requirements Manual. Also see ER 1130-2-500, Chapter 7, Section 4, Use, Loan, Lease, and Hire of Plant regarding the limitation of floating plant to official business.

(5) Recognized, industry-accepted procedures will be followed so that the efficiency of boilers may be increased by reducing the amount of time lost in cleaning boilers resulting from deterioration of tubes, shells, and other parts by the action of impurities in boiler water. Required analysis and corrective action as a result of tests and treatment will be carried out in accordance with manufacturers' recommendations.

(6) The following ENG Forms will be utilized as required on major items of floating plant:

(a) ENG Form 2198, Operating Log

(b) ENG Form 3398, Hopper Dredge Log Book

(c) ENG Form 3702, Engine Room Log-Major Floating Plant

(d) ENG Form 3703, Operating Record of Main Engines and Other Equipment (Diesel Electric with 2 main engines)

(e) ENG Form 3703-A, Operating Record of Auxiliary Diesel Engine Generator

(f) ENG Form 3703-B, Operating Record of Main Engines and Other Equipment (Diesel Electric with 4 main engines)

(g) ENG Form 3735-A, Daily Report of Operations-Sidecasting Dredge

(h) DA Form 5273, Harbor Boat - Deck and Engine Log for Class “B” Vessels.

(7) EM 1125-2-312, Manual of Instructions for Hopper Dredge Operations and Standard Reporting Procedures, was issued for the purpose of developing data and reports that will reflect accurately the performance of hopper dredges and for making evaluations of the effectiveness of hopper dredges.

(8) Minimum Fleet Dredge Location Reports. District Commanders shall report in the Dredging Information System database, the annual schedule and each significant change in location of the Corps Minimum Fleet dredges.

(9) Reports of Plant Operations. Reports of operation of Corps Minimum Fleet dredges will be prepared and submitted as follows:

(a) When the work schedule indicates a continuous assignment of 60 calendar days or more on one project, a Status Report will be submitted monthly. A Completion Report will be submitted, in lieu of Status Reports, in those cases when the dredging or drilling work on a project is completed in less than 60 days.

(b) Status or Completion Reports and the Annual Reports of Operations for Hopper and Sidecasting Dredges, will be prepared in accordance with instructions contained in EM 1125-2-312, Manual of Instructions-Hopper and Sidecasting Dredge Operations and Standard Reporting Procedures. Hopper Dredge reports will be prepared on ENG Form 27, Report of Operations-Hopper Dredges. Sidecasting Dredge reports will be prepared on ENG Form 3735A, Report of Operations - Sidecasting Dredges. An annual report will be furnished to CECW-OD.

(c) Status or Completion Reports and the Annual Report of Operations Pipeline, Dipper or Bucket Dredges, ENG Form 4267 will be submitted to the MSC Commander for review. An annual report will be furnished to HQUSACE (CECW-OD).

(10) In accordance with Chapter 9 of ER 1130-2-520, Navigation and Dredging Operations and Maintenance Policies, foul-weather gear consisting of trousers, coats, headgear, boots, and gloves may be issued to personnel on floating plant whose duties require frequent and extended exposure to the elements. All of the foul weather gear, shall meet the requirements of 46 CFR for retroreflective material. This gear will be issued on a personal basis and the individual to whom custody is given will be held responsible for its care and availability. The use of foul weather gear will be restricted to duties connected with the dredge operation, repair, and maintenance. The equipment will be turned in for salvage or reissue whenever personnel are transferred or are otherwise separated from the vessel. Replacement of worn or damaged equipment for permanent personnel will also require the turn-in of previously furnished gear.

(11) During a hopper dredge port watch, one licensed deck officer and one licensed engine room officer will be required to remain aboard the dredge. The Chief Electrician or an Assistant Electrician may also be required to remain aboard the dredge. These personnel will perform regularly assigned duties during daylight hours, preferably during their normal scheduled tour. During this period, the employees involved will be responsible for supervision of required maintenance and repair work. These employees will remain aboard during the port watch, but will not normally be assigned any regular duties outside the specified scheduled tour and will be free to remain in quarters or elsewhere aboard the dredge. If they are required to perform any routine duty or emergency work outside their specified tour, they will be compensated in accordance with normal overtime regulations. A minimum number of unlicensed personnel, consistent with work requirements, will be assigned to a port watch, but will normally be permitted to leave the dredge after their specified tour. Other unlicensed personnel will also normally be permitted to leave the dredge; however, if an emergency exists, or if convenient and safe access to the shore is not available, or if their absence will jeopardize the safety of the plant, the Master or Senior Deck Officer may require them to remain aboard.

(12) Launch service will normally be provided to and from hopper dredges once each day during daylight hours, weather, sea conditions, locations, and other conditions permitting. Off-duty crew members may avail themselves of this service on a space available basis, if they are not required to be on board to meet the minimum-staffing requirements. The District Commander or his authorized representative, at his discretion, may provide additional launch service, the extent

of which will depend upon distances, costs, weather and sea conditions, safety, and other pertinent factors involved. Since residence aboard the dredge is a condition of employment, launch service is an auxiliary benefit and not a right of the employee. This service is in addition to launch transportation to and from the plant to be provided personnel before the beginning and after the end of their weekly or bi-weekly tours of duty in instances where the dredge does not dock for repairs, supplies, or lay periods. When possible, a single launch will provide all services on crew change days.

(13) Manning and Licensing.

(a) Hopper dredges of the Corps of Engineers shall be staffed with the following positions with U.S. Coast Guard license requirements as indicated. Future assignees to these positions must hold the licenses shown below:

POSITION	LICENSE REQUIRED
Master	Master
Assistant Master	Master
Chief Mate (for 7-day /week operation)	Chief Mate (1st class Pilot for Great Lakes)
2nd Mate	2nd Mate (1st class Pilot for Great Lakes)
3rd Mate (As required)	3rd Mate (1st class Pilot for Great Lakes)
Chief Engineer	Chief Engineer
Assistant Chief Engineer	Chief Engineer
1st Assistant Engineer (for 7-day/week operation)	1st Assistant Engineer
2nd Assistant Engineer	2nd Assistant Engineer
3rd Assistant Engineer (as required)	3rd Assistant Engineer

(b) Assignments will not be made to Assistant Master or Assistant Chief Engineer jobs unless the individual proposed holds the required license and, in fact, is required to assume the duties of the Master or Chief Engineer in his absence. The license requirement and the requirement to "act for" will be clearly stated in applicable job description.

(c) Jobs involving the full duties and responsibilities of Assistant Master or Assistant Chief Engineer will be evaluated in accordance with an approved personnel ladder diagram.

(d) Sidecasting dredges and other major floating plant engaged in ocean and coastwise service may be staffed in accordance with the position alignment indicated in paragraph 7-14c(13)(a).

d. General.

(1) The permissible number of passengers in skiffs of the Corps of Engineers will be in accordance with EM 385-1-1.

(2) The use and procurement of personal flotation devices will be in accordance with the applicable provisions of 46 CFR and EM 385-1-1 and the procedures outlined in Appendix D.

(c) ER 840-1-1 describes the procedures for flags for vessels.

(d) Equipment and Stores for Vessels.

(1) Masters, superintendents, launchmen, or others designated in charge of Corps of Engineers vessels will be held responsible that the equipment required by law or safety of the vessel and its crew is always on board when their vessels are in use.

(2) The Department of the Navy has authorized Commandants of Navy Yards to issue from stock such marine stores as naval fittings and equipage, as may be required for use on Corps of Engineers vessels.

7-15. Authorities for Acquisition and Repair. See ER 1130-2-500, Chapter 7, Section 1, Plant Design, Acquisition, and Construction; ER 1130-2-500, Chapter 7, Section 3, Plant Inspection, Maintenance, Operation and Repair; and ER 1130-2-500, Chapter 15, Acquisition of Plant, Ownership, and Financial Management.

Section IV. Corps of Engineers Marine Engineering Board

7-16. Purpose. This section establishes guidance for the USACE Marine Engineering Board.

7-17. Background and Composition of the Board.

a. The Marine Engineering Board was initially established as a continuing body on 25 February 1944 under the title Hopper Dredge Board. The title was changed to Dredge Board on 18 March 1963 and subsequently changed to its present designation, Marine Engineering Board, on 26 July 1974.

b. The Marine Engineering Board was established by the Director of Civil Works and is administered by the Operations, Construction and Readiness Division, HQUSACE.

c. Membership of the Board is shown in Appendix P. The Chairperson shall be Chief of the Dredging and Navigation Branch, Operations, Construction and Readiness Division, HQUSACE.

7-18. Functions of the Board. The Board is responsible for the following functions which are applicable to all USACE marine plant. Findings and recommendations are to be submitted through the Chief, Operations, Construction and Readiness Division, to the Director of Civil Works, HQUSACE for approval.

a. Establishes fundamental principles for the design, construction, and operation of marine plant.

b. Recommends policies and major design features for new construction and major alterations to marine plant.

c. Reviews requests for waivers to standard designs.

d. Reviews innovative design concepts and objectives for major items of floating plant.

e. Recommends policies for acquisition, replacement, or rehabilitation of major items of floating plant.

f. Reviews requests for waivers for Major Subordinate Commands/District Commands design of major items of floating plant (ER 1130-2-500, Chapter 7, Section I, Design, Acquisition, and Construction).

g. Performs program review and establishes project priorities for the USACE Marine Design Center.

h. Performs other functions in connection with dredges and other marine plant, dredging techniques, work practices, and operational procedures as assigned by the Director of Civil Works, HQUSACE.

7-19. Responsibilities.

a. The Chairperson of the Board will report through the Chief, Operations, Construction and Readiness Division to the Director of Civil Works, HQUSACE.

b. The Chairperson will convene meetings as required to accomplish the Board objectives, normally semi-annually. The minutes and transactions of the Board will be agreed upon by voting members, and forwarded to HQUSACE for approval.

c. The Chief, Operations, Construction and Readiness Division will implement the Board transactions once approved by the Director of Civil Works.

d. Appropriate staff from the USACE Marine Design Center will attend meetings and will serve as the technical representatives and provide recommendations to the Board.

e. An executive assistant will be appointed by the Chairperson to serve as Secretary to the Marine Engineering Board to provide functional and administrative support for the Board.